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SEPTEMBER, 1852.

On the Rate of Mortality in the Medical Profession. By F. G. P. NEISON.

[Read before the Statistical Society of London, 15th March, 1852.]

RECENTLY I have had occasion to investigate the rate of mortality among two different classes of medical men; the one class being the Officers of the Medical Department of the Royal Army, and the other, the Members of the Royal Medical Chirurgical Society. The facts relating to the former were collected from the records of the Society formed for the benefit of the Widows of the Officers of the Medical Department of Her Majesty's Army, established in the year 1816, and the facts relating to the latter class were abstracted from the books of the Royal Medical Chirurgical Society, established in the year 1805.

The investigation, so far as related to the first group of facts, was required to be conducted with the greatest care and scrutiny, as the management of large pecuniary interests depended on the results arrived at. The utmost care was, therefore, exercised in this part of the analysis. Inquirers into vital statistics had not hitherto touched the question of the mortality among the members of the medical department of the army, but there was reason to believe from their peculiar duties, and the varied climates to which so many of them are exposed, that some unusual feature would show itself in the mortality to which they are subject, and, therefore, under this conviction, it appeared absolutely necessary to determine, from the records of the Society, the rate of mortality to which its own members have been subject. After a somewhat laborious and very troublesome analysis of all the information procurable, the following exhibits the results arrived at. In the course of this analysis it was discovered that the social condition of the members had an important influence on the rate of mortality, and it was rendered necessary finally to exhibit the rate of mortality in connection with these conditions; and it will be found that the results are not only exceedingly curious but of great practical importance.

In the following table are exhibited the principal elementary facts from which to determine the rate of mortality among the members of the Society, who entered it when unmarried, from the establishment of the Society, in 1816, until the 1st of January, 1851, excluding only such members as may have entered it in the married condition of life,

TABLE I.—*Mortality among Members Entering Single.*

Age.	Number Entered at each Age.	Number remaining under Observation from preceding Age.	Total Number under Observation at each Age.	Died.	Struck off.	Discontinued.	Alive.	Total gone off.	Half of				Number Exposed to Risk.
									Entered.	Struck off.	Discontinued.	Total.	
a	*b*	*c*	*d*	*e*	*f*	*g*	*h*	*i*	*j*	*k*	*l*	*m*	*n*
17...	3	...	3	...	...	...	...	...	1·5	...	...	1·5	1·5
18...	1	3	4	...	...	...	...	...	5	...	...	·5	3·5
19...	2	4	6	...	...	...	...	...	1	...	...	1	5
20...	21	6	27	2	...	...	...	2	10·5	...	...	10·5	16·5
21...	99	25	124	9	...	3	...	12	49·5	...	1·5	51	73
22...	141	112	253	12	7	5	5	29	70·5	3·5	2·5	76·5	176·5
23...	195	224	419	17	6	12	14	49	97·5	3	6	106·5	312·5
24...	153	370	523	11	9	8	11	39	76·5	4·5	4	85	438
25...	168	484	652	26	15	12	25	78	84	7·5	6	97·5	554·5
26...	133	574	707	25	19	24	24	92	66·5	9·5	12	88	619
27...	62	615	677	10	15	16	25	66	31	7·5	8	46·5	630·5
28...	41	611	652	12	19	14	25	70	20·5	9·5	7	37	615
29...	32	582	614	15	12	12	22	61	16	6	6	28	586
30...	17	553	570	10	12	12	23	57	8·5	6	6	20·5	549·5
31...	31	513	544	13	5	10	28	56	15·5	2·5	5	23	521
32...	32	488	520	17	6	5	29	57	16	3	2·5	21·5	498·5
33...	24	463	487	12	2	4	20	38	12	1	2	15	472
34...	28	449	477	8	5	7	22	42	14	2·5	3·5	20	457
35...	25	435	460	11	3	6	15	35	12·5	1·5	3	17	443
36...	19	425	444	7	3	4	17	31	9·5	1·5	2	13	431
37...	13	413	416	12	4	7	12	35	6·5	2	3·5	12	404
38...	12	391	403	7	...	4	8	19	6	...	2	8	395
39...	20	384	404	4	2	4	9	19	10	1	2	13	391
40...	14	385	399	10	1	4	6	21	7	·5	2	9·5	389·5
41...	9	378	387	14	3	8	11	36	4·5	1·5	4	10	377
42...	9	351	360	12	1	11	5	29	4·5	·5	5·5	10·5	349·5
43..	3	331	334	5	1	7	1	14	1·5	·5	3·5	5·5	328·5
44...	6	320	326	3	1	5	4	13	3	·5	2·5	6	320
45...	6	313	319	5	2	4	7	18	3	1	2	6	313
46...	3	301	304	7	2	2	4	15	1·5	1	1	3·5	300·5
47...	4	289	293	3	1	2	4	10	2	·5	1	3·5	289·5
48...	3	283	286	4	1	7	7	19	1·5	·5	3·5	5·5	280·5
49...	...	267	267	5	1	6	5	17	...	·5	3	3·5	263·5
50...	...	250	250	6	...	1	2	9	...	...	·5	·5	249·5
51...	2	241	243	6	3	4	5	18	1	1·5	2	4·5	238·5
52...	...	225	225	5	1	6	1	13	...	·5	3	3·5	221·5
53...	...	212	212	2	1	3	2	8	...	·5	1·5	2	210
54...	3	204	207	8	...	1	3	12	1·5	...	·5	2	205
55...	2	195	197	5	...	3	4	12	1	...	1·5	2·5	194·5
56...	...	185	185	4	4	2	9	19	...	2	1	3	182
57...	1	166	167	...	...	2	3	5	·5	...	1	1·5	165·5
58...	...	162	162	7	2	7	10	26	...	1	3·5	4·5	157·5
59...	1	136	137	3	1	4	8	16	·5	·5	2	3	134
60...	...	121	121	1	...	1	11	13	...	...	·5	·5	120·5
61...	...	108	108	3	2	...	6	11	...	1	...	1	107
62...	...	97	97	2	...	...	9	11	...	...	...	...	97
63...	...	86	86	4	...	2	5	11	...	...	1	1	85
64...	...	75	75	2	...	2	4	8	...	...	1	1	74
65...	1	67	68	2	2	...	3	7	·5	1	...	1·5	66·5
66...	1	61	62	3	1	1	6	11	·5	·5	·5	1·5	60·5
67...	...	...	51	1	...	...	5	6	...	...	...	...	51
68...	...	...	45	2	1	1	4	8	...	·5	·5	1	44
69...	...	...	37	...	...	...	4	4	...	...	...	...	37
70...	...	...	33	3	...	...	3	6	...	...	...	...	33
71...	...	...	27	...	...	...	2	2	...	...	...	...	27
72...	...	...	25	2	...	...	2	4	...	...	...	...	25
73...	...	...	21	2	...	...	1	3	...	...	...	...	21
74...	...	...	18	1	...	2	2	5	...	...	1	1	17
75...	...	...	13	...	...	...	2	2	...	...	...	...	13
76...	...	...	11	...	...	1	1	2	...	...	·5	·5	10·5
77...	...	...	9	1	...	...	2	3	...	...	...	...	9
78...	...	...	6	2	...	...	...	2	...	...	...	...	6
79...	...	...	4	...	...	...	1	1	...	...	...	...	4
80...	...	...	3	1	...	...	1	2	...	...	...	...	3
81...	...	...	1	...	...	...	1	1	...	...	...	...	1
82...	...	...	...	...	...	...	...	...	...	...	...	...	...
83...	...	...	...	...	...	...	...	...	...	...	...	...	...
84...	...	...	...	...	...	...	...	...	...	...	...	...	...
85...	...	...	...	...	...	...	...	...	...	...	...	...	...
	1,340	...	15,567	386	176	268	510	1,340	670·0	88·0	134·0	892·0	14675·0

To some the explanations given to the headings of the different columns will render them intelligible, but to those not familiar with such inquiries the following explanation may be useful.

Column (*a*) Represents the age at which each officer entered the society, or when other contingent event connected therewith took place.

(*b*) The number of officers entered at each age.

(*c*) The number of officers remaining under observation from each preceding age, and the residue of all those entering in each preceding age, and who have not become subject to any of the contingent events represented in the adjoining columns. For example, three officers entered at the age of 17, and not falling under the events specified in the adjoining columns, they survive until the succeeding age, and come under observation as officers of the age of 18.

(*d*) Again, 1 officer entered at the age of 18, which, with the 3 remaining from those who entered the society at the age of 17, make 4, come under observation at some time or other after completing the 17th year of their life, and before completing the 18th year; none of these become subject to any of the events specified, and the whole 4 are therefore carried under observation to the following age, 19, when 2 other officers entered the society, making 6 under observation at the age of 19. Again, at age 25, 168 officers entered the society, which, with 484 remaining under observation from the preceding age, make 652 altogether under observation at the age 25. Of these, 26 die during the course of that year, 15 are struck off, and 12 discontinue, while 25, who have recently entered the society, remain alive on the 1st of January, 1851, and, therefore, are not longer observed; 78 officers, in all, therefore, go from under observation at the age of 25, and 574 are carried forward to the succeeding age of 26, which, with 133 entered at that age, brings 707 officers altogether under review at the age of 26.

(*e*) Represents the numbers dying at each age or term of life.

(*f*) Those who are struck off.

(*g*) Those who discontinue.

(*h*) Represents the number of officers alive on the 1st of January, 1851, and who have not become subject to any of the contingent events represented in columns *e* to *g* inclusive.

(*i*) Contains the total of columns *e* to *h*, inclusive, and represents the number of officers who cease to come under observation in any of the more advanced ages. For example, at the age 30, column *d* represents 570 under observation; but before attaining the 31st year of age, 57 of these pass from observation, leaving 513 to come under observation in the 31st year of age, as shown in column *c*.

(*j*) Represents one-half of the numbers entering the society at each year of life at which admissions take place, and, is therefore, one-half of the numbers in column *b*. In like manner, column

(*k*) Represents one-half of the numbers in column *f*. In like manner, column

(*l*) Represents one-half the numbers in column *g*; and column

(*m*) The total of columns *j*, *k*, and *l*. The purpose of these four columns will appear in the explanation of column

(*n*) Which represents the number of lives exposed a complete year to the risk of mortality while connected with the society, and the figures in this column are produced by subtracting from the numbers in column *d* the numbers in column *m* opposite the same age. As already stated, column *d* contains the gross number under observation at some time or other throughout the year of life set forth in column *a*; but as column *b* contains, for each age up to 66, the numbers who have entered the society, and as officers, one with another, enter at different periods throughout the year, it has been found, by observation, that on an average each is, during the year of entry, exposed to only six months', or one half-year's mortality, and hence column *j* represents that amount of risk for all officers who have just joined the society. In like manner columns *k* and *l* represent the amount of risk to which officers discontinued from the society for either of the causes specified in those columns, are exposed, on the principle that, one with another, the discontinuances will take place in the middle of the year. It thus appears that as column *m* is the total of *j*, *k*, and *l*, that it shows the proper number to be deducted from column *d*, in order to find the number exposed to the risk of a whole year's mortality.

The following Abstract, A, will make the contents of the preceding table better understood.

ABSTRACT A.

Ages.	Number Exposed to Risk.	Died.	Mortality per Cent.
20—24........	1016·5	51	5·017
25—29........	3005·0	88	2·928
30—34........	2498·0	60	2·402
35—39........	2064·0	41	1·986
40—44........	1764·5	44	2·494
45—49........	1447·0	24	1·660
50—54........	1124·5	27	2·401
55—59........	833·5	19	2·280
60—64........	483·5	12	2·482
65—69........	259·0	8	3·089
70—74........	123·0	8	6·504
75—79........	42·5	3	7·059
80—84........	4·0	1	25·000
Total....	14665·0	386	2·632

It is thus seen that of 14,665 years of risk, to which the members whose experience is recorded in Table I were exposed, no less than 386 died, or 2·632 per cent., while the mortality according to the average for the whole male population of England and Wales at corresponding ages is 1·888 per cent.; but what is most striking about these results is the very excessive mortality at the ages under 55, and the reduced mortality at the ages 55 and upwards. This will be found to exceed not only the mortality of the male population of England and Wales at the mature and active term of life, but to be actually about equal to that of the officers of the Bengal military service at the corresponding ages. The following exhibits the results for each of the three classes :—

Mortality in the term of life, 20-54, among
The Members of the Medical Department of the Army = 2·593 per cent.
The Officers of the Bengal Army.................................... = 2·635 „
The Male Population of England and Wales .... = 1·155 „

It is thus evident that the rate of mortality among the members of the medical department of the army, who entered the Society while unmarried, does not differ widely from that found to prevail among the officers of the Bengal army, but at the same time it will be found to exceed the rate of mortality among the male population of this country by 124·502 per cent. This very striking and unexpected result at once proved the necessity for an accurate analysis of the rate of mortality among the members of the Society.

In the preceding Abstract A, there is one feature which cannot fail to arrest attention: the remarkably high and unprecedented mortality at the younger ages, and which gradually decreases up to the age of 40. The following shows the mortality per cent. for each quinquennium in the three preceding groups of observations:—

Ages.	Medical Department of the Royal Army.	Bengal Military Fund.	Male Population of England and Wales.
20—24........	5·017	2·324	0·845
25—29........	2·928	2·501	0·981
30—34........	2·402	2·779	1·049
35—39........	1·986	2·864	1·134

The mortality at the younger ages in the medical department of the army is certainly a circumstance of much importance, and on more grounds than one, calls for investigation and inquiry; but in order to show how very diversified is the rate of mortality in individual classes of the community, it may be well to direct attention to the remarkable contrast in the results of the three preceding groups, at ages 55 and upwards, or rather within the term of life, 55—84.

The rate of mortality in each of the following classes in the term of life 55-84:
Members of the Medical Department of the Royal Army = 2·922 per cent.
Officers of the Bengal Army .... = 5·652 „
Male Population of England and Wales........................... = 5·056 „

The very low rate of mortality at the advanced ages among the members of the medical department of the army, as set forth in Abstract A, is just as remarkable as the excessive rate found to prevail at the younger ages.

So much having been said on the rate of mortality among those members who entered the society while single or unmarried, attention will next be directed to those who joined the society as married members.

The explanation already given of the construction of Table I will be equally applicable to the following table, and need not, therefore, be repeated.

TABLE II.—*Mortality of those who Entered Married.*

Age.	Number Entered at each Age.	Number remaining under Observation from Age preceding.	Total Number under Observation at each Age.	Died.	Struck off.	Discontinued.	Alive.	Total gone off.	Half of				Number Exposed to Risk.
									Entered.	Struck off.	Discontinued.	Total.	
21...	1	...	1	...	...	...	...	...	·5	...	...	·5	·5
22...	1	1	2	...	...	1	...	1	·5	...	·5	1	1
23...	1	1	2	...	...	...	...	...	·5	...	...	·5	1·5
24...	3	2	5	...	...	1	...	1	1·5	...	·5	2	3
25...	3	4	7	...	...	...	...	...	1·5	...	...	1·5	5·5
26...	8	7	15	...	...	...	...	...	4	...	...	4	11
27...	5	15	20	1	...	...	...	1	2·5	...	...	2·5	17·5
28...	6	19	25	...	...	...	...	...	3	...	...	3	22
29...	6	25	31	...	...	...	...	...	3	...	...	3	28
30...	5	31	36	1	...	...	...	1	2·5	...	...	2·5	33·5
31...	9	35	44	...	...	1	...	1	4·5	...	·5	5	39
32...	12	43	55	...	...	...	...	...	6	...	...	6	49
33...	11	55	66	...	...	...	...	...	5·5	...	...	5·5	60·5
34...	13	66	79	...	1	1	...	2	6·5	·5	·5	7·5	71·5
35...	7	77	84	5	...	...	...	5	3·5	...	...	3·5	80·5
36...	8	79	87	...	...	1	...	1	4	...	·5	4·5	82·5
37...	10	86	96	1	1	...	...	2	5	·5	...	5·5	90·5
38...	5	94	99	2	...	...	...	2	2·5	...	...	2·5	96·5
39...	9	97	106	1	...	...	1	2	4·5	...	...	4·5	101·5
40...	11	104	115	3	...	...	...	3	5·5	...	...	5·5	109·5
41...	6	112	118	3	...	1	...	4	3	...	·5	3·5	114·5
42...	6	114	120	2	...	1	...	3	3	...	·5	3·5	116·5
43...	10	117	127	1	...	1	...	2	5	...	·5	5·5	121·6
44...	6	126	131	2	...	1	...	3	3	...	·5	3·5	127·5
45...	9	128	137	4	...	...	...	4	4·5	...	...	4·5	132·5
46...	9	133	142	3	...	...	1	4	4·5	...	...	4·5	137·5
47...	1	138	139	2	...	...	...	2	·5	...	...	·5	138·5
48...	...	137	137	...	1	1	...	2	...	·5	·5	1	136
49...	5	135	140	1	...	...	...	1	2·5	...	...	2·5	137·5
50...	...	139	139	3	...	...	...	3	...	...	...	...	139
51...	1	136	137	8	...	...	1	9	·5	...	...	·5	136·5
52...	3	128	131	...	...	2	...	2	1·5	...	1	2·5	128·5
53...	2	129	131	1	...	...	1	2	1	...	...	1	130
54...	2	129	131	7	...	1	...	8	1	...	·5	1·5	129.5
55...	...	123	123	4	1	1	...	6	...	·5	·5	1	122
56...	1	117	118	3	...	1	...	4	·5	...	·5	1	117
57 ..	1	114	115	5	...	...	...	5	·5	...	...	·5	114·5
58...	...	110	110	4	...	1	2	7	...	...	·5	·5	109·5
59..	2	103	105	5	1	...	3	9	1	·5	...	1·5	103·5
60...	1	96	97	2	...	1	2	5	·5	...	·5	1	96
61...	...	92	92	4	...	1	4	9	...	...	·5	·5	91·5
62...	1	83	84	3	...	...	...	3	·5	...	...	·5	83·5
63...	...	81	81	1	1	...	2	4	...	·5	...	·5	80·5
64...	...	77	77	4	...	...	2	6	...	...	...	...	77
65...	1	71	72	1	...	...	3	4	·5	...	...	·5	71·5
66...	...	68	68	1	...	1	3	5	...	...	·5	·5	67·5
67...	...	63	63	3	...	...	2	5	...	...	...	...	63
68...	...	58	58	3	...	...	3	6	...	...	...	...	58
69...	...	52	52	3	...	1	5	9	...	...	·5	·5	51·5
70...	...	43	43	3	...	...	2	5	...	...	...	...	43
71...	...	38	38	3	1	1	1	6	...	·5	·5	1	37
72...	...	32	32	4	...	1	1	6	...	...	·5	·5	31·5
73...	...	26	26	1	...	1	1	3	...	...	·5	·5	25·5
74...	1	23	23	1	...	...	...	1	·5	...	...	·5	22·5
75...	...	...	23	...	...	...	2	2	...	...	...	...	23
76...	...	...	21	4	...	1	...	5	...	...	·5	·5	20·5
77...	...	...	16	1	...	...	...	1	...	...	...	...	16
78...	...	...	15	3	...	...	3	6	...	...	...	...	15
79...	...	...	9	1	...	...	2	3	..	...	...	...	9
80...	...	...	6	...	...	...	3	3	...	...	...	...	6
81...	...	...	3	...	...	...	1	1	...	...	...	...	3
82...	...	...	2	2	...	...	...	2	...	...	...	...	2
83...	...	...	...	...	...	...	...	...	...	...	...	...	...
84...	...	...	...	...	...	...	...	...	...	...	...	...	...
85...	...	...	...	...	...	...	...	...	...	...	...	...	...
	202	...	4,407	120	7	24	51	202	101·0	3·5	12·0	116·5	4290·5

The following abstract will make the contents of Table II better understood.

ABSTRACT B.

Ages.	Number Exposed to Risk.	Died.	Mortality per Cent.
25—29........	84·0	1	1·190
30—34........	253·5	1	·395
35—39........	451·5	9	1·993
40—44........	589·5	11	1·866
45—49........	682·0	10	1·466
50—54........	663·5	19	2·863
55—59........	566·5	21	3·823
60—64........	428·5	14	3·267
65—69........	311·5	11	3·531
70—74	159·5	12	7·524
75—79........	83·5	9	10·778
80—84........	11·0	2	18·181
Total....	4284·5	120	2·801

It is thus found that while the collected results for the preceding abstract show a somewhat higher mortality than that in Abstract A, still there is a great dissimilarity at the different periods of life. The mortality, as given in Abstract B, which represents the deaths among such members as entered the society when married, being more in accordance with the results derived from observations on other classes of society exhibiting an increasing rate of mortality as life advances, and pretty uniformly exceeding that for England and Wales. The few irregularities may be fairly supposed to arise from the fluctuations due to the comparatively small number of facts over which the observations recorded in Abstract B extend.

In order to compare the results in this abstract with those already furnished in Abstract A, it will be sufficient to give the rate of mortality within the periods of 25-54 and 55-84.

Ages.	Mortality per Cent. among those Members who entered the Society	
	Unmarried. Abstract A.	Married. Abstract B.
25—54........	2·386	1·872
55—84........	2·922	4·422

This abstract affords abundant evidence in support of the conclusion that there is some circumstance connected with the mode or condition of life in which the members of the two classes were placed, having a marked influence on their health and longevity. It is, however, unnecessary to dwell longer on the difference between the preceding two classes, for it is obvious that, in Abstract A, which includes the group entering the society while unmarried, many of them must have married subsequent to the date of entry, and therefore the results do not afford a proper comparison between the mortality incidental to the conditions of married and single life; an analysis has, therefore, been made to show the results peculiar to those conditions.

TABLE III.—*Mortality among Members Entering Single and remaining under Observation whilst Single only.*

Age.	Number Entered at each Age.	Number remaining under Observation from Age preceding.	Total Number under Observation at each Age.	Died.	Struck off.	Discontinued.	Married.	Alive.	Total gone off.	Half of				Total.	Number Exposed to Risk.
										Entered.	Struck off.	Discontinued.	Married.		
17...	3	...	3	...	...	...	...	...	...	1·5	...	...	...	1·5	1·5
18...	1	3	4	...	...	...	...	...	...	·5	...	...	...	.5	3·5
19...	2	4	6	...	...	...	...	...	...	1	...	...	...	1	5
20...	21	6	27	2	...	...	...	...	2	10·5	...	...	...	10·5	16·5
21...	99	25	124	9	...	3	...	...	12	49·5	...	1·5	...	51	73
22...	141	112	253	12	7	4	1	5	29	70·5	3·5	2	·5	76·5	176·5
23...	195	224	419	17	6	12	3	14	52	97·5	3	6	1·5	108	311
24...	153	367	520	11	9	8	2	11	41	76·5	4·5	4	1	86	434
25...	168	479	647	25	15	12	5	25	82	84	7·5	6	2·5	100	547
26...	133	565	698	25	19	23	6	24	97	66·5	9·5	11·5	3	90·5	607·5
27...	62	601	663	10	15	15	9	25	74	31	7·5	7·5	4·5	50·5	612·5
28...	41	589	630	12	19	12	12	24	79	20·5	9·5	6	6	42	588
29...	32	551	583	13	12	10	12	20	67	16	6	5	6	33	550
30...	17	516	533	9	12	11	20	20	72	8·5	6	5·5	10	30	503
31...	31	461	492	10	5	10	17	24	66	15·5	2·5	5	8·5	31·5	460·5
32...	32	426	458	16	6	4	16	26	68	16	3	2	8	29	429
33...	24	390	414	12	2	2	16	18	50	12	1	1	8	22	392
34...	28	364	392	8	5	7	12	17	49	14	2·5	3·5	6	26	366
35...	25	343	368	8	2	4	10	11	35	12·5	1	2	5	20·5	347·5
36...	19	333	352	7	3	3	12	15	40	9·5	1·5	1·5	6	18·5	333·5
37...	13	312	325	11	3	7	7	10	38	6·5	1·5	3·5	3·5	15	310
38...	12	287	299	6	...	4	17	6	33	6	...	2	8·5	16·5	282·5
39...	20	266	286	1	2	4	7	6	20	10	1	2	3·5	16·5	269·5
40...	14	266	280	8	1	4	6	4	23	7	·5	2	3	12·5	267·5
41...	9	257	266	13	3	7	3	8	34	4·5	1·5	3·5	1·5	11	255
42...	9	232	241	9	1	7	6	2	25	4·5	·5	3·5	3	11·5	229·5
43...	3	216	219	4	...	6	6	1	17	1·5	...	3	3	7·5	211·5
44...	6	202	208	2	1	5	7	3	18	3	·5	2·5	3·5	9·5	198·5
45...	6	190	196	3	2	3	4	2	14	3	1	1·5	2	7·5	188·5
46...	3	182	185	3	1	2	3	3	12	1·5	·5	1	1·5	4·5	180·5
47...	4	173	177	2	1	1	2	2	8	2	·5	·5	1	4	173
48...	3	169	172	1	...	7	3	5	16	1·5	...	3·5	1·5	6·5	165·5
49...	...	156	156	2	...	4	7	3	16	...	...	2	3·5	5·5	150·5
50...	...	140	140	3	...	1	2	2	8	...	...	·5	1	1·5	138·5
51...	2	132	134	4	2	2	3	2	13	1	1	1	1·5	4·5	129·5
52...	...	121	121	1	...	3	2	1	7	...	...	1·5	1	2·5	118·5
53...	...	114	114	1	...	2	5	2	10	...	...	1	2 5	3·5	110·5
54...	3	104	107	7	...	1	1	3	12	1·5	...	·5	·5	2·5	104·5
55...	2	95	97	2	...	1	1	2	6	1	...	·5	·5	2	95
56...	...	91	91	2	4	1	2	4	13	...	2	·5	1	3·5	87·5
57...	1	78	79	...	...	2	...	1	3	·5	...	1	...	1·5	77·5
58...	...	76	76	3	2	6	...	2	13	...	1	3	...	4	72
59...	1	63	64	...	...	2	2	3	7	·5	...	1	1	2·5	61·5
60...	...	57	57	...	...	1	...	5	6	...	...	·5	...	·5	56·5
61...	...	51	51	...	1	...	...	2	3	...	·5	...	...	·5	50·5
62...	...	48	48	1	...	...	...	4	5	...	...	...	...	...	48
63...	...	43	43	2	...	2	...	1	5	...	...	1	...	1	42
64...	...	38	38	...	...	2	...	1	3	...	...	1	...	1	37
65...	1	35	36	2	2	...	...	2	6	·5	1	...	...	1·5	34·5
66...	1	30	31	...	1	...	...	2	3	·5	·5	...	...	1	30
67...	...	...	28	...	...	...	...	4	4	...	...	...	...	...	28
68...	...	...	24	...	1	...	...	1	2	...	·5	...	...	·5	23·5
69...	...	...	22	...	...	...	...	1	1	...	...	...	...	...	22
70...	...	...	21	1	...	...	...	2	3	...	...	...	...	...	21
71...	...	...	18	...	...	...	...	1	1	...	...	...	...	...	18
72...	...	...	17	1	...	...	...	2	3	...	...	...	...	...	17
73...	...	...	14	1	...	...	...	1	2	...	...	...	...	...	14
74...	...	...	12	...	...	1	...	2	3	...	...	·5	...	·5	11·5
75...	...	...	9	...	...	...	...	1	1	...	...	...	...	...	9
76...	...	...	8	...	...	...	...	1	1	...	...	...	...	...	8
77...	...	...	7	1	...	...	...	2	3	...	...	...	...	...	7
78...	...	...	4	1	...	...	...	...	1	...	...	...	...	...	4
79...	...	...	3	...	...	...	...	1	1	...	...	...	...	...	3
80...	...	...	2	...	...	...	...	1	1	...	...	...	...	...	2
81...	...	...	1	...	...	...	...	1	1	...	...	...	...	...	1
82...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
83...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
84...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
85...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	1,340	...	12,113	304	165	228	249	394	1,340	670·0	82·5	114·0	124·5	991·0	11139·0

The first part of the inquiry, made to show the results connected with the mortality of single life, will be found set forth in the preceding table, which contains all the facts bearing on the rate of mortality among such members as entered the society in the single condition, and the observations extended over the period while they remained single; in the event of any member becoming married, all further observation ceases.

The following Abstract, C, shows the results arrived at in Table III.

ABSTRACT C.

Ages.	Number Exposed to Risk.	Died.	Mortality per Cent.
20—24........	1011·0	51	5·045
25—29	2905·0	85	2·926
30—34........	2150·5	55	2·558
35—39........	1543·0	33	2·138
40—44........	1162·0	36	3·099
45—49........	858·0	11	1·282
50—54........	601·5	16	2·660
55—59........	393·5	7	1·779
60—64........	234·0	3	1·282
65—69........	138·0	2	1·449
70—74........	81·5	3	3·681
75—79........	31·0	2	6·451
80—84........	3·0	....	....
Total....	11112·0	304	2·736

This abstract shows that the results characteristic of Abstract A are still more strongly developed here; the mortality of early life being higher, that of advanced life lower, and the general mortality being even higher than that of Abstract A. It would hence follow that the elimination of the cases of those who subsequently become married has the effect of increasing the general mortality for the residue, as well as increasing the mortality at the early ages and diminishing it at the advanced periods of life. This will more clearly be seen by an inspection of the following figures:—

Ages.	Mortality per Cent. among all those who entered Single. Abstract A.	Mortality per Cent. of those who entered Single, but excluding further observation after becoming Married. Abstract C.
20—54........	2·593	2·805
55—84........	2·922	1·918
20—84........	2·632	2·736

It is hence evident that the vicissitudes of unmarried life have a more powerful influence on mortality under the age of 55 than above it, compared with the causes connected with the married condition, and further evidence of this will be derived from the following two tables.

In the next abstract are included such facts only as constitute the complement of Table III, that is, the observations connected with those who have entered the society while single, but who afterwards married; the observations commencing from the date of marriage; and therefore the facts in Table III and the following abstract, constitute the whole of those given in Table I. It has already been shown that the aggregate mortality of Table III exceeds that of Table I, and therefore the mortality of the next abstract must fall under that of Table I; but it has also been shown that the mortality of Table III has, in an eminent degree, portrayed the features characteristic of Table I, and, consequently, Abstract IV, following, must be expected to be more uniform, and approximate more nearly to the rate of mortality prevailing in Table II.

ABSTRACT D.

Mortality of those who entered Single, but afterwards Married; the observations commencing at Marriage.

Ages.	Number Exposed to Risk.	Died.	Mortality per Cent.
20—24........	5·5	....	....
25—29........	100·0	3	3·000
30—34........	347·5	5	1·439
35—39........	521·0	8	1·536
40—44........	602·5	3	1·328
45—49........	589·0	13	2·207
50—54........	523·0	11	2·103
55—59........	440·0	12	2·727
60—64........	249·5	9	3·607
65—69........	121·0	6	4·959
70—74........	41·5	5	12·048
75—79........	11·5	1	8·070
80—84........	1·0	1	100·000
Total....	3553·3	82	2·308

The following shows the condensed results of this abstract:—

Mortality from ages 20—54 = 1·785 per cent.
" " 55—84 = 3·944 "
" " 20—84 = 2·308 "

Table III, preceding, showed the rate of mortality among such members who entered single during the period they continued so, all further observation ceasing after marriage; and in the next abstract will be set forth the rate of mortality among such members who entered married, and will embrace all the facts given in Table II, as well as those who may have entered single but afterwards married, the observations commencing at the date of marriage, and will include the facts contained in Abstract D.

ABSTRACT E.

Mortality among Members entered Married, and entered Single but afterwards Married; the Single coming under observation at Marriage.

Ages.	Number Exposed to Risk.	Died.	Mortality per Cent.
25—29........	184·0	4	2·174
30—34........	601·0	6	·998
35—39........	972·5	17	1·748
40—44........	1192·0	19	1·594
45—49........	1271·0	23	1·810
50—54........	1186·5	30	2·529
55—59........	1006·5	33	3·279
60—64........	678·0	23	3·392
65—69........	432·5	17	3·931
70—74........	201·0	17	8·458
75—79........	95·0	10	10·526
80—84........	12·0	3	25·000
Total....	7832·0	202	2·580

In this abstract the following will be found to represent the general results arrived at:—

Mortality from ages 25—54 = 1·831 per cent.
" " 55—84 = 4·247 "
" " 25—84 = 2·580 "

The results of this abstract, as compared with those of Table III and Abstract C, are interesting, as showing the distinction between the mortality of married and single life. The following gives a condensed illustration of the difference of mortality:—

Ages.	Mortality per Cent. between the Married and Single Members of the Society.	
	Single Members. Abstract C.	Married Members. Abstract E.
25—54........	2·559	1·831
55—84........	1·918	4·247
25—84........	2·504	2·580

In this, as in the preceding instances, it is obvious that the characteristic of the mortality of single life is still maintained, the rate of mortality among the unmarried members being greater at the earlier ages, and less at those ages more advanced.

Having thus exhibited the rate of mortality for each of the preceding groups and combinations, it may be now useful to show the results for the combined experience of all the members, whether married or single. The following Abstract F shows, for each quinquennial term of life, the rate of mortality among all the members of the society, from its establishment in 1816, till the 1st of January, 1851.

ABSTRACT F.

Mortality among all the Members, Married and Single.

Ages.	Number Exposed to Risk.	Died.	Mortality per Cent.
20—24........	1016·5	51	5·017
25—29........	3089·0	89	2·881
30—34........	2751·5	61	2·217
35—39........	2515·5	50	1·988
40—44........	2354·0	55	2·336
45—49........	2129·0	34	1·597
50—54........	1788·0	46	2·573
55—59........	1400·0	40	2·857
60—64........	912·0	26	2·850
65—69........	570·5	19	3·330
70—74........	282·5	20	7·080
75—79........	126·0	12	9·524
80—84........	15·0	3	20·000
Total....	18949·5	506	2·670

The condensed results are as follows :—

Mortality between ages 20—54 = 2·467 per cent.
,, ,, 55—84 = 3·629 ,,
,, ,, 20—84 = 2·670 ,,

The next abstract will give a succinct view of the results set forth in each of the preceding six abstracts, as well as the general mortality at the corresponding ages for the male population of England and Wales, as given in "Contributions to Vital Statistics," pages 4 and 6.

ABSTRACT G.

Ages.	Mortality per Cent.						
	Entered Single. A.	Entered Married. B.	Entered Single, and remaining under observation while Single. C.	Entered Single, but afterwards Married; the observations commencing at Marriage. D.	Entered Married and entered Single, but the Single coming under observation at Marriage. E.	All the Members, Married and Single. F.	Male Population of England and Wales.
20—24....	5·017	....	5·045	....	....	5·017	·845
25—29....	2·928	1·190	2·926	3·000	2·174	2·881	·981
30—34....	2·402	·395	2·558	1·439	·998	2·217	1·049
35—39....	1·986	1·993	2·138	1·536	1·748	1·988	1·134
40—44....	2·494	1·866	3·099	1·328	1·594	2·336	1·279
45—49....	1·660	1·466	1·282	2·207	1·820	1·597	1·506
50—54....	2·401	2·863	2·660	2·103	2·529	2·573	1·842
55—59....	2·280	3·823	1·779	2·727	3·279	2·857	2·393
60—64....	2·482	3·267	1·282	3·607	3·392	2·850	3·242
65—69....	3·089	3·531	1·449	4·959	3·931	3·330	4·608
70—74....	6·553	7·524	3·681	12·048	8·408	7·080	6·686
75—79....	7·059	10·778	6·451	8·700	10·526	9·528	10·041
80—84....	25·000	18·181	....	100·000	25·000	20·000	15·055
Total....	2·632	2·801	2·736	2·308	2·580	2·670	2·025

The following gives a condensed view of the results arrived at for each of the preceding groups or classes:—

Groups or Classes.	Mortality per Cent. between		
	Ages 25—54.	Ages 55—84.	Ages 25—84.
Abstract A.—Entered single	2·386	2·922	2·454
„ B.—Entered married	1·872	4·422	2·801
„ C.—Members of Abstract A during *un*married state	2·559	1·918	2·504
„ D.—Members of Abstract A during married state	1·789	3·944	2·312
„ E.—Married members	1·831	4·247	2·580
„ F.—Both single and married members	2·290	3·629	2·537
Male population of England and Wales	1·166	5·056	1·918

As already stated, each abstract gives the data and correct rate of mortality for each quinquennial period of life; and the above condensed form of exhibiting the mortality per cent. may, for general purposes, be considered sufficient to illustrate the relative bearing of the different groups; but, at the same time, it is necessary to exercise caution against the employment of those figures or others similarly derived, and extending over any considerable term of life, as giving an exact expression of the true mortality among the different classes compared. The true mortality can only be collected from the details of each of the preceding tables, or from the rate of mortality given for each quinquennium in the corresponding abstracts A, B, C, D, E, and F. The nature of the error contained in the condensed illustrations will be found explained in page 41 of "Contributions to Vital Statistics." The conditions necessary to the correct comparison of results derived from observations extending over a considerable term of life, such as between ages 25-54, 55-84, and 25-84, or any other extended periods of life are, that the relative numbers of persons over which the observations are made at the different periods of life should be in exact proportion to each other in the different groups of observations; but should there be in any one group an undue proportion of persons at the younger or older ages, the resulting rate of mortality will become modified accordingly, even although out of equal numbers in each group at different ages the same number of deaths would take place in the same time. Inattention to the errors inherent in such illustrations has often led inquirers to very false conclusions; the method is, however, useful, if employed only for general purposes, and with proper caution. The following figures exhibit the number of years' risk observed on at each term of life.

Groups.	Number of Years' Observation at the Term of Life.			
	25—54.	Proportion per Cent.	55—84.	Proportion per Cent.
Abstract A.—Entered single	11903·0	87·1	1745·5	12·9
„ B.—Entered married	2724·0	63·5	1560·5	36·5
„ C.—Members of Abstract A during *un*married state	9220·0	91·3	881·0	8·7
„ D.—Members of Abstract A during married state	2683·0	75·6	864·5	24·4
„ E.—Married members	5407·0	69·0	2425·0	31·0
„ F.—Both single and married members	14627·0	81·6	3306·0	18·4

It is evident that in some of the above groups there is very great irregularity in the distribution of the number of facts, or years of risk observed at different ages, and hence the rate of mortality per cent. derived from these collected or aggregated results, and which must necessarily be a mean of such irregularly distributed facts, cannot be relied on as showing the correct relation of the causes of mortality pressing on each class of observations. These remarks apply with greater force to the comparison of the results for the aggregate of all ages, than to the comparative results for either of the extended terms of life, 25-54, or 55-84. It will be seen that in Group C, 91·3 per cent. of the facts are contained between ages 25-54, but in Group B there is only 63·5 per cent. of the observation of that group made between the same ages.

There is another method, however, by which the aggregate mortality of the combined ages may be compared without any error, and that is by comparing the actual number of deaths which has taken place, in each class or group, with that which would have taken place if the rate of mortality had prevailed at each term of life in each group, which is known to correctly represent the mortality at the same terms of life in any given or standard table of mortality with which the results of each group may be compared.

The following shows the number of deaths which have actually taken place in each group, and the number which would have taken place had the same rate of mortality prevailed which is known to represent the mortality of the male population of this country.

Groups.	Difference between the Mortality which has actually taken place and that which would have happened, according to the ratio for the Male Population of England and Wales, between the following ages:								
	20—54.			55—84.			20—84.		
	Actual	England and Wales.	Difference per Cent.	Actual	England and Wales.	Difference per Cent.	Actual	England and Wales.	Difference per Cent.
Abstract A. Entered Single...	335	151·8	+120	51	59·5	−15	386	211·3	+ 83
„ B. Entered Married	51	38·5	+ 34	69	62·1	+11	120	100·6	+ 20
„ C. Members of Abstract A during *un*married state......	287	116·0	+147	17	32·3	−47	304	148·3	+101
„ D. Members of Abstract A during married state	48	35·8	+ 33	34	27·2	+26	82	63·0	+ 30
„ E. Married Members	99	74·3	+ 33	103	89·3	+15	202	163·6	+ 24
„ F. Both Married and Single Members.....	386	190·3	+113	120	121·6	− 1	506	311·9	+ 62

An examination of the above results only confirm the conclusions formerly arrived at; namely, that the members taken in the aggregate under the age of 55 are subject to an unprecedented amount of mortality, but that subsequent to that age the rate of mortality does not differ widely from that of the population generally, as may be more apparent from the following figures taken from the preceding abstract:—

	Actual.	England and Wales.
Number of deaths between the ages 20—54	= 386	190·3
„ „ 55—84	= 120	121·6
„ „ 20—84	= 506	311·9

It is also evident, from the results of the preceding abstract, as well as from those formerly brought under consideration, that the mortality in Group E. which represents the married members, differs very widely from that in Group C, which represents the *un*married.

Period of Life.	Difference per Cent. between the Actual Mortality and that of England and Wales among the	
	Unmarried Group.	Married Group.
Between ages 20—54	+ 147 per cent.	+ 33 per cent.
„ „ 55—84	− 47 „	+ 15 „
„ „ 20—84	+ 101 „	+ 24 „

It is thus abundantly evident that the rate of mortality of the married members is so very different from that of the single, that in any calculations intended to measure the duration of life among the married members only, it would not be proper to include the mortality of the single members.

The following table is formed from the data given in Abstract E, preceding, and represents the mortality for the mean of each quinquennial term of life among the married members of the society.

TABLE IV.

Married Members.

Interpolation of Mortality per Cent.

(1) Original Quantities.

Δ_1 and Δ_2 = 1st and 2nd Differences.

$a = \cdot 2\,\Delta_1$

$b = \cdot 04\,\Delta_2$

Age.	(1.)	Δ_1	Δ_2
27........	2·174	− 1·176	+ 1·926
		a = − ·2352	b = + ·07704
32........	·998	+ ·750	− ·904
		+ ·1500	− ·03616
37........	1·748	− ·154	+ ·370
		− ·0308	+ ·01480
42........	1·594	+ ·216	·503
		+ ·0432	·02012
47........	1·810	·719	+ ·031
		·1438	+ ·00124
52........	2·529	·750	− ·637
		·1500	− ·02548
57........	3·279	·113	+ ·426
		·0226	+ ·01704
62........	3·392	·539	+ 3·988
		·1078	+ ·15952
67........	3·931	4·527	− 2·459
		·9054	− ·09836
72........	8·458	2·068	+ 12·406
		·4136	+ ·49624
77........	10·526	+ 14·474	....
		+ 2·8948	
82........	25·000	....	....

The next table, viewed in connexion with the preceding one, shows the mode by which the intermediate terms are determined and interpolated between the original quantities given in Abstract E. For an explanation, more in detail, of the construction of this table, the preceding table, and the following table, see the paper on the "Mortality of Master Mariners" in vol. xiii. of the *Journal of the Statistical Society*.

TABLE V.

Married Members.

Interpolation of Mortality per Cent.

Interval $= \frac{1}{5}$

(1) = Original Quantities.
1st $\delta_1 = a - 2b$.
$\delta_2 = b$.

Age.	(1.)	δ_1	Age.	(1.)	δ_1
27........	**2·174**	− ·38928	47........	**1·810**	·14132
28........	1·78472	·31224	48........	1·95132	·14256
29	1·47248	·23520	49........	2·09388	·14380
30........	1·23728	·15816	50........	2·23768	·14504
31........	1·07912	− ·08112	51........	2·38272	·14628
32........	**·998**	+ .22232	52........	**2·529**	·20096
33	1·22032	·18616	53........	2·72996	·17548
34........	1·40648	·15000	54........	2·90544	·15000
35........	1·55648	·11384	55........	3·05544	·12452
36........	1·67032	+ ·07768	56........	3·17996	+ ·09904
37........	**1·748**	− ·06040	57........	**3·279**	− ·01148
38........	1·68760	·04560	58........	3·26752	+ ·00556
39........	1·64200	·03080	59........	3·27308	·02260
40........	1·61120	·01600	60........	3·29568	·03964
41........	1·59520	− ·00120	61........	3·33532	+ ·05668
42........	**1·594**	+ ·00296	62........	**3·392**	− ·21124
43........	1·59696	·02308	63........	3·18076	− ·05172
44........	1·62004	·04320	64........	3·12904	+ ·10780
45........	1·66324	·06332	65........	3·23684	·26732
46........	1·72656	·08344	66........	3·50416	·42684

TABLE V.—*Continued.*

Age.	(1).	δ_1	Age.	(1).	δ_1
67........	3·931		77........	10·526	
		1·10212			1·90232
68........	5·03312		78........	12·42832	
		1·00376			2·39856
69........	6·03688		79........	14·82688	
		·90540			2·89480
70........	6·94228		80........	17·72168	
		·80704			3·39104
71........	7·74932		81........	21·11272	
		+ ·70868			+ 3·88728
72........	8·458		82........	25·000	....
		− ·57888			
73........	7·87912		....	....	....
		− ·08264			
74........	7·79648		....	....	....
		+ ·41360			
75........	8·21008		....	....	....
		·90984			
76........	9·11992		....	....	....
		1·40608			

From the results obtained in Table V the following Table of Decrements is derived :—

TABLE VI.—*Married Members.*

Age.	Mortality per Cent. $= d$. $1 - \frac{d}{100}$.	$\lambda\, l$ $\lambda\left(1 - \frac{d}{100}\right) = c$ $5 + \Sigma(c) = \lambda\, l$.	Number Living $= l$.	Number Dying.	Age.	Mortality per Cent. $= d$. $1 - \frac{d}{100}$.	$\lambda\, l$ $\lambda\left(1 - \frac{d}{100}\right) = c$ $5 + \Sigma(c) = \lambda\, l$.	Number Living $= l$.	Number Dying.
25....	2·174	5·00000	100,000	2,175	37...	1·748	4·91702	82,608	1,445
	·97826	9·99045				·98252	9·99234		
26....	2·174	4·99045	97,825	2,128	38....	1·688	·90936	81,163	1,369
	·97826	·99045				·98312	·99261		
27....	2·174	·98090	95,697	2,081	39....	1·642	·90197	79,794	1,310
	·97826	·99045				·98358	·99281		
28....	1·785	·97135	93,616	1,671	40....	1·611	·89478	78,484	1,264
	·98215	·99218				·98389	·99295		
29....	1·472	·96353	91,945	1,353	41....	1·595	·88773	77,220	1,231
	·98528	·99356				·98405	·99302		
30....	1·237	·95709	90,592	1,121	42...	1·594	·88075	75,987	1,212
	·98763	·99459				·98406	·99302		
31....	1·079	·95168	89,471	966	43....	1·597	·87377	74,777	1,194
	·98921	·99529				·98403	·99301		
32....	·998	·94697	83,505	882	44....	1·620	·86678	73,583	1,191
	·99002	·99565				·98380	·99291		
33....	1·220	·94262	87,623	1,168	45....	1·663	·85969	72,392	1,203
	·98780	·99467				·98337	·99272		
34....	1·406	·93729	86,555	1,217	46....	1·727	·85241	71,189	1,229
	·98594	·99385				·98273	·99244		
35....	1·556	·93114	85,338	1,328	47....	1·810	·84485	69,960	1,266
	·98444	·99319				·98190	·99207		
36....	1·670	4·92433	84,010	1,402	48....	1·951	4·83692	68,694	1,339
	·98330	9·99269				·98049	9·99145		

TABLE VI.—*Continued.*

Age.	Mortality per Cent. $=d$. $1-\frac{d}{100}$.	$\lambda\, l$ $\lambda\left(1-\frac{d}{100}\right)=c$ $5+\Sigma(c)=\lambda l$.	Number Living $=l$.	Number Dying.	Age.	Mortality per Cent. $=d$. $1-\frac{d}{100}$.	$\lambda\, l$ $\lambda\left(1-\frac{d}{100}\right)=c$ $5+\Sigma(c)=\lambda l$.	Number Living $=l$.	Number Dying.
49....	2·094 ·97906	4·82837 9·99081	67,355	1,410	75....	8·210 ·91790	4·34772 9·96280	22,270	1,828
50....	2·238 ·97762	·81918 ·99017	65,945	1,476	76....	9·120 ·90880	·31052 ·95847	20,442	1,864
51. ..	2·383 ·97617	·80935 ·98952	64,469	1,537	77....	10·526 89474	·26899 ·95170	18,578	1,956
52....	2·529 ·97471	·79887 ·98887	62,932	1,593	78....	10·924 ·89076	·22069 ·94976	16,622	1,816
53....	2·730 ·97270	·78774 ·98798	61,339	1,674	79....	11·896 ·88104	·17045 ·94500	14,806	1,761
54....	2·905 ·97095	·77572 ·98720	59,665	1,733	80....	12·889 ·87111	·11545 ·94008	13,045	1,681
55....	3·055 ·96945	·76292 ·98652	57,932	1,770	81....	13·972 ·86028	·05553 ·93464	11,364	1,588
56...	3·180 ·96820	·74944 ·98597	56,162	1,786	82....	15·055 ·84945	3·99017 ·92913	9,776	1,472
57....	3·279 ·96721	·73541 ·98552	54,376	1,783	83....	16·206 ·83794	·91930 ·92321	8,304	1,346
58....	3·268 ·96732	·72093 ·98557	52,593	1,719	84....	17·399 ·82601	·84251 ·91699	6,958	1,210
59....	3·273 ·96727	·70650 ·98555	50,874	1,664	85....	18·716 ·81284	·75950 ·91000	5,748	1,076
60...	3·296 ·96700	·69205 ·98545	49,210	1,622	86....	20·098 ·79902	·66950 ·90256	4,672	939
61....	3·335 ·96665	·67750 ·98527	47,588	1,587	87....	21·777 ·78223	·57206 ·89333	3,733	813
62....	3·392 ·96608	·66277 ·98501	46,001	1,560	88....	23·095 ·76905	·46539 ·88595	2,920	674
63....	3·181 ·96819	·64778 ·98597	44,441	1,413	89....	24·687 ·75313	·35134 ·87687	2,246	555
64...	3·129 ·96871	·63375 ·98619	43,028	1,347	90....	26·277 ·73723	·22821 ·86760	1,691	444
65....	3·237 ·96763	·61994 ·98571	41,681	1,349	91....	27·877 72·123	·09581 ·85808	1,247	348
66...	3·504 ·96496	·60565 ·98452	40,332	1,412	92....	29·528 ·70472	2·95389 ·84801	899	265
67....	3·931 ·96069	·59017 ·98259	38,920	1,530	93 ...	31·127 ·68873	·80190 ·83805	634	198
68...	5·033 ·94967	·57276 ·97757	37,390	1,882	94....	32·817 ·67183	·63995 ·82726	436	143
69....	6·037 ·93963	·55033 ·97295	35,508	2,144	95....	34·297 ·65703	·46721 ·81759	293	100
70....	6·942 ·93058	·52328 ·96875	33,364	2,316	96....	35·572 ·64428	·28480 ·80908	193	69
71....	7·749 ·92251	·49203 ·96497	31,048	2,406	97....	36·644 ·63356	·09388 ·80179	124	45
72....	8·458 ·91542	·45700 ·96162	28,642	2,423	98....	37·482 ·62518	1·89567 ·79601	79	30
73....	7·879 ·92121	·41862 ·96435	26,219	2,066	99....	38·066 ·61934	·69168 ·79163	49	19
74....	7·796 ·92204	4·38297 9·96475	24,153	1,883	100....	38·650 ·61350	·48361 9·78781	30	11
					101....		1·27142	19	7

An examination of the results set forth in column 4 of this table shows that of the population living at age 25, one-half only will be alive in about thirty-four years afterwards, but in the male population of England and Wales one-half would be alive for forty years afterwards. The following shows the equation of life in the above table, which represents the mortality of the married members of the society, and also according to the mortality of the male population of England and Wales.

Ages.	Equation of Life among the	
	Married Members of the Society. Table VI.	Males. England and Wales.
25............	34·525	40·309
30............	32·453	36·482
40............	26·772	28·790
50............	20·169	21·255

The next portion of this paper relates to the rate of mortality among the members of the Royal Medical-Chirurgical Society, deduced from a list which was furnished to me of all the resident members elected into the Society since its establishment in the year 1805, specifying the date of election, the causes of withdrawal or removal from the Society, or whether they still continue members. This list has been analyzed so as to exhibit, in a clear and simple manner, the rate of mortality among the members.

In the first place attention is directed to Table A,* which furnishes a very interesting and succinct view of the changes of the Society, in respect to the election and withdrawal of its members for each year since the commencement. From the second column of this table it will be seen that, since the year 1805, 684 resident members have been elected, and, by column 5, 96 of these have died, and, according to column 6, 280 have either resigned or, from some cause or other, have ceased to be resident members, so that out of the whole 684 members elected, 376 have now, from various causes, ceased to belong to the society, leaving, at the period up to which the abstracts were completed, 308 existing members. The other columns of this table explain themselves, but the point to which attention is now specially directed is that of the rate of mortality amongst the members. The last column of Table A shows the rate of mortality, but the following abstract gives a more condensed and convenient view of the results arrived at:—

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* See page 271.

ABSTRACT I.

Years.	Number Exposed to Risk.	Died.	Mortality per Cent.
1805 to 1809	303·0	1	0·330
1810 „ 1814	410·5	....	0·000
1815 „ 1819	710·0	3	0·423
1820 „ 1824	926·0	5	0·539
1825 „ 1829	950·0	17	1·789
1830 „ 1834	795·5	21	2·639
1835 „ 1839	933·0	9	0·965
1840 „ 1844	1278·5	14	1·095
1845 „ 1849	1527·5	26	1·702
Total	7834·0	96	1·225

So far as these results extend, and considering the limits within which the ages of the members, on admission, must range, it is evident that the mortality of the members is under that of the population of the country generally.

Attention is next requested to Table B,* which very much resembles Table A, only that the final column exhibits the ratio of withdrawals from all causes, inclusive of deaths, for each year of the Society's existence. From the following condensed abstract of this table, it will be seen that, with the exception of the first quinquennial period of years, there is no very extraordinary fluctuation in the ratio of withdrawals from the general average.

ABSTRACT II.

Year of Entry.	Number Exposed to Risk of Withdrawal.	Total gone off.	Per Centage of Total Withdrawals.
1805 to 1809	304·0	3	0·987
1810 „ 1814	421·5	22	5·219
1815 „ 1819	721·5	26	3·604
1820 „ 1824	944·5	42	4·447
1825 „ 1829	967·5	52	5·375
1830 „ 1834	816·5	63	7·716
1835 „ 1839	942·0	27	2·866
1840 „ 1844	1295·5	48	3·705
1845 „ 1849	1561·0	93	5·951
Total	7974·0	376	4·715

It is obvious, however, that Tables A and B give, simply, a chronological view of the Society since its commencement, exhibiting the changes which have taken place in its members during each particular year; but it is evident that the more important aspect in which to look at the question is under chances of withdrawal from the Society, from various causes, during the first, second, and each succeeding year of membership, without regard to the chronological dates of these events.

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* See page 218.

Table C* has, therefore, been constructed on this hypothesis; the first column shows the years of membership, the second column shows the number of members who have been 1, 2, 3, 4, &c., years connected with the Society, and the other columns sufficiently explain themselves. It thus appears that of the 684 members elected, *one* died in the first year of membership, and 15 still remain alive, being in the first year of membership. Again, 668 entered on the second year of membership, 2 died in that year, 10 withdrew from other causes, and 22 are alive who are members of not more than two years' standing. Also 4 entered on the forty-second year of their membership, 1 died in that year, and 1 of them remains alive, being a member of forty-two years' standing. Likewise of the 2 members who entered on the forty-third year of membership, 1 died in that year, and the other passed on to the forty-fourth year of membership, and died. It hence appears that the whole 684 members elected have, up to the present time, passed through 8,316 years of observation, or about 12 years to each member; but this must not be confounded with the average period of membership, for the above result is derived from observations on a large number but recently elected; the correct average duration of membership will hereafter appear. The average rate of mortality in this table will be found to coincide with that of Table A, being 1·225 per cent., but an inspection of the last column shows that as the period of membership increases, or, in other words, as age advances, there is a marked increase in the rate of mortality. The following is a brief abstract of these results:—

ABSTRACT III.

Years in the Society.	Number Exposed to Risk of Mortality.	Died.	Mortality per Cent.
1 to 4	2198	9	0·409
5 ,, 9	2190·5	14	0·639
10 ,, 14	1353·5	20	1·477
15 ,, 19	811·5	11	1·355
20 ,, 24	578·5	8	1·383
25 ,, 29	410	17	4·146
30 ,, 34	200	7	3·500
35 ,, 39	74	6	8·108
40 ,, 44	18	4	2·222
Total	7834	96	1·225

Assuming that the average age of admission of members will range from 25 to 35 years of age, although, perhaps, it may be more strictly stated to range between 25 and 30, an inspection of the above figures will show that at the younger ages the mortality is much under the average of the population generally, but at the older and more advanced ages greater.

The next Table, D,† is similar in arrangement to Table C, only showing in the final column, instead of the rate of mortality, the ratio per cent., as in Table B, of withdrawals from the society from all causes, including death, and here, as in the preceding table, the causes of withdrawal will be found to increase with the period of membership.

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* See page 219.

† See page 220.

The following is a condensed abstract of Table D :—

ABSTRACT IV.

Years in the Society.	Number Exposed to Risk of Withdrawal.	Died, Resigned, Ceased to Pay, and Ejected.	Per Centage of Total Withdrawals.
1 to 4........	2,226	65	2·920
5 „ 9........	2,243	119	5·305
10 „ 14........	1,376	65	4·724
15 „ 19........	828	44	5·314
20 „ 24........	586	23	3·925
25 „ 29........	417	31	7·434
30 „ 34........	204	15	7·353
35 „ 39........	76	10	13·158
40 „ 44........	18	4	22·222
Total....	7,974	376	4·715

From the results of this abstract, Table E* has been constructed so as to exhibit in an interesting manner the chances and average duration of membership as deduced from the experience of the Royal Medical-Chirurgical Society, from its establishment, in the year 1805, up to the present time.

This table has been compiled from the results set forth in the last column of Abstract IV, in the same manner in which Table VI, preceding, was constructed from the figures given in Abstract E, only that, in the former case, third differences were used in the interpolations, but in the later instances, second differences only (see paper on the Mortality of Master Mariners, in vol. xiii. of the *Journal of the Statistical Society*).

Assuming that 100,000 members, or any submultiple by ten of that number, entered the Society, column 4 will show the numbers remaining in the Society in each succeeding year, and column 5 will show the number of members withdrawing from all causes. Hence, of 100,000 members, 1,920 would withdraw in the first year of membership, or of 1,000 entering, 19 would withdraw. Again, of 1,000 members elected into the Society, 516 would enter on the fifteenth year of membership, and 486 on their sixteenth year, or, in other words, the equation of membership, or what is technically of almost the same value for the present purpose, the expectation of membership when just elected is about fifteen and a half years. If the experience of this Society can be taken as any criterion of that of other learned societies, this result deduced from the preceding table would be of some practical importance in the regulation of the composition-money required in lieu of the annual subscriptions paid by members. Keeping in view the fact that the expectation of membership is about fifteen years, it is easy to determine the present value of a corresponding annuity. By the term "present value," is meant the single sum of money which, paid down, would, if invested at the same rate of interest as the annual subscriptions, meet precisely the same liabilities as they fall due. Assuming that the funds or composition paid in commutation of yearly subscriptions could be invested to yield 3 per cent. compound interest, the present value of the annuity equivalent to that dependent on the expectation of membership is about eleven years' purchase. But there is another view to be taken of this question. If the practice of receiving composition payments were permitted and generally adopted by the members, there can be no doubt that the withdrawals from the Society from other causes than death, or those specified in column 4 of Table D, would be very much reduced. Different societies will, no doubt, be variously affected by these causes, and this feature of Tables A, B, C, and D, has been principally introduced here in order to direct more general attention to the question.

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* See page 221.

It is, however, very curious and instructive to observe the rate of mortality developed in some of these latter tables, and particularly in Table C and Abstract III, as compared with the rate of mortality found to prevail among the medical officers of the Royal Army. The difference is certainly one of the most remarkable results yet deduced by any inquiry into Vital Statistics.

The following Abstract V shows that throughout the period of life 26-70, the mortality among the members of the Royal Medical and Chirurgical Society approximates very closely to that of the male population of England and Wales, being considerably less between ages 26—35, somewhat higher above 35 years of age, but in the whole term of life, varying from 26 to 70 years of age, the mortality differs but little, the actual number of deaths in the Society being 96, while that which would have taken place according to the mortality of England and Wales is 97·1.

ABSTRACT V.

Mortality among the Members of the Royal Medical and Chirurgical Society.

Ages.	Number Exposed to Risk.	Mortality Per Cent.	Deaths		England and Wales.		
			At each Term of Life.	Total.	Mortality Per Cent.	Deaths that would have happened at each time of Life.	Total.
26 to 30	2198·0	0·409	9	....	0·998	21·9	....
31 ,, 35	2190·5	0·639	14	23	1·063	23·3	45·2
36 ,, 40	1353·5	1·477	20	43	1·157	15·7	60·9
41 ,, 45	811·5	1·355	11	54	1·319	10·7	71·6
46 ,, 50	578·5	1·383	8	62	1·560	9·0	80·6
51 ,, 55	410·0	4·146	17	79	1·935	7·9	88·5
56 ,, 60	200·0	3·500	7	86	2·529	5·1	93·6
61 ,, 65	74·0	8·108	6	92	3·474	2·6	96·2
66 ,, 70	18·0	2·222	4	96	4·947	0·9	97·1
	7834·0	1·225	96	....	1·239	97·1	....

TABLE A.

Year of Entry. (1)	Number Entered. (2)	Number under Observation from Year preceding. (3)	Total Number under Observation in each Year. (4)	Died. (5)		Resigned, Ceased to Pay, and Ejected. (6)	Total gone off. (7)	Half of Entered. Half of Discontinued. Entered (8)	Discontinued. (9)	Total. (10)	Number Exposed to Risk of Mortality. (11)		Mortality per Cent. (12)
1805....	60	....	60	1	....	....	....	30	....	30	303	30	0·330
1806...	7	60	67		....	....	....	3·5	....	3·5		63·5	
1807 ..	2	67	69		....	....	....	1	....	1		68	
1808...	3	69	72		....	1	1	1·5	·5	2		70	
1809...	2	71	73		1	1	2	1	·5	1·5		71·5	
1810....	9	71	80		....	....	....	4·5	....	4·5	410·5	75·5	0·000
1811...	8	80	88		....	19	19	4	9·5	13·5		74·5	
1812...	9	69	78		....	....	....	4·5	....	4·5		73·5	
1813...	15	78	93		....	1	1	7·5	·5	8		85	
1814...	22	92	114		....	2	2	11	1	12		102	
1815....	11	112	123	3	....	7	7	5·5	3·5	9	710	114	0·423
1816...	23	116	139		1	2	3	11·5	1	12·5		126·5	
1817...	16	136	152		....	5	5	8	2·5	10·5		141·5	
1818...	23	147	170		1	4	5	11·5	2	13·5		156·5	
1819 ..	18	165	183		1	5	6	9	2·5	11·5		171·5	
1820...	9	177	186	5	....	6	6	4·5	3	7·5	926	178·5	0·539
1821...	13	180	193		2	9	11	6·5	4·5	11		182	
1822...	8	182	190		....	4	4	4	2	6		184	
1823....	14	186	200		....	9	9	7	4·5	11·5		188·5	
1824....	13	191	204		3	9	12	6·5	4·5	11		193	
1825....	6	192	198	7	....	8	8	3	4	7	950	191	1·789
1826 ..	6	190	196		1	3	4	3	1·5	4·5		191·5	
1827...	12	192	204		1	10	11	6	5	11		193	
1828....	13	183	196		....	8	8	6·5	4	10·5		185·5	
1829....	8	188	196		5	6	11	4	3	7		189	
1830....	6	185	191	21	1	11	12	3	5·5	8·5	795·5	182·5	2·639
1831...	....	179	179		7	19	26	....	9·5	9·5		169·5	
1832....	3	153	156		6	6	12	1·5	3	4·5		151·5	
1833...	5	144	149		2	1	3	2·5	·5	3		146	
1834...	5	146	151		5	5	10	2·5	2·5	5		146	
1835...	24	141	165	9	1	2	3	12	1	13	933	152	0·965
1836...	26	162	188		2	3	5	13	1·5	14·5		173·5	
1837....	21	183	204		....	4	4	10·5	2	12·5		191·5	
1838...	11	200	211		3	5	8	5·5	2·5	8		203	
1839...	24	203	227		3	4	7	12	2	14		213	
1840...	21	220	241	14	3	7	10	10·5	3·5	14	1278·5	227	1·095
1841.	24	231	255		1	5	6	12	2·5	14·5		240·5	
1842....	20	249	269		3	4	7	10	2	12		257	
1843....	24	262	286		5	7	12	12	3·5	15·5		270·5	
1844 ...	30	274	304		2	11	13	15	5·5	20·5		283·5	
1845....	20	291	311	26	7	11	18	10	5·5	15·5	1527·5	295·5	1·702
1846...	24	293	317		6	15	21	12	7·5	19·5		297·5	
1847...	29	296	325		3	13	16	14·5	6·5	21		304	
1848....	22	309	331		2	12	14	11	6	17		314	
1849 ..	15	327	332		8	16	24	7·5	8	15·5		316·5	
1850....	....	308	....		....	....	....	....	....	....		....	....
	684	....	8,316	96		280	376	342·0	140·0	482·0	7834·0		1·225

TABLE B.

Year of Entry. (1)	Number Entered. (2)	Number under Observation from Year preceding. (3)	Total Number under Observation in each Year. (4)	Died. (5)	Resigned, Ceased to Pay, and Ejected. (6)	Total gone off. (7)		Half of Entered. (8)	Number Exposed to Risk of Withdrawal from the Society from all causes, including Death. (9)		Per Centage of Total Withdrawals. (10)
1805....	60	....	60	....	....	3	....	30	304	30	0·987
1806....	7	60	67	....	....		....	3·5		63·5	
1807....	2	67	69	....	....		....	1		68	
1808....	3	69	72	....	1		1	1·5		70·5	
1809....	2	71	73	1	1		2	1		72	
1810....	9	71	80	....	....	22	....	4·5	421·5	75·5	5·219
1811....	8	80	88	....	19		19	4		84	
1812....	9	69	78	....	....		....	4·5		73·5	
1813....	15	78	93	....	1		1	7·5		85·5	
1814....	22	92	114	....	2		2	11		103	
1815....	11	112	123	....	7	26	7	5·5	721·5	117·5	3·604
1816....	23	116	139	1	2		3	11·5		127·5	
1817....	16	136	152	....	5		5	8		144	
1818....	23	147	170	1	4		5	11·5		158·5	
1819....	18	165	183	1	5		6	9		174	
1820....	9	177	186	....	6	42	6	4·5	944·5	181·5	4·447
1821....	13	180	193	2	9		11	6·5		186·5	
1822....	8	182	190	....	4		4	4		186	
1823....	14	186	200	....	9		9	7		193	
1824....	13	191	204	3	9		12	6·5		197·5	
1825....	6	192	198	....	8	52	8	3	967·5	195	5·375
1826....	6	190	196	1	3		4	3		193	
1827....	12	192	204	11	10		21	6		198	
1828....	13	183	196	...	8		8	6·5		189·5	
1829....	8	188	196	5	6		11	4		192	
1830....	6	185	191	1	11	63	12	3	816·5	188	7·716
1831....	....	179	179	7	19		26	....		179	
1832....	3	153	156	6	6		12	1·5		154·5	
1833....	5	144	149	2	1		3	2·5		146·5	
1834....	5	146	151	5	5		10	2·5		148·5	
1835....	24	141	165	1	2	27	3	12	942	153	2·866
1836....	26	162	188	2	3		5	13		175	
1837....	21	183	204	....	4		4	10·5		193·5	
1838....	11	200	211	3	5		8	5·5		205·5	
1839....	24	203	227	3	4		7	12		215	
1840....	21	220	241	3	7	48	10	10·5	1295·5	230·5	3·705
1841....	24	231	255	1	5		6	12		243	
1842....	20	249	269	3	4		7	10		259	
1843....	24	262	286	5	7		12	12		274	
1844....	30	274	304	2	11		13	15		289	
1845....	20	291	311	7	11	93	18	10	1561	301	5·951
1846....	24	293	317	6	15		21	12		305	
1847....	29	296	325	3	13		16	14·5		310·5	
1848....	22	309	331	2	12		14	11		320	
1849....	15	327	332	8	16		24	7·5		324·5	
1850....	....	308	....	....	....		....	....		....	....
	684	....	8,316	96	280	376		342·0	7974·0		4·715

TABLE C.

Rate of Mortality among the Members of the Royal Medical and Chirurgical Society.

Years in the Society. (1)	Number under Observation in each Year. (2)	Died. (3)		Discontinued. Resigned, Ceased to Pay, and Ejected. (4)	Alive. (5)	Total gone off (6)	Half of Discontinued. (7)	Number Exposed to Risk of Mortality. (8)		Mortality per Cent. (9)
1........	684	9	1	....	15	16	....	2198	342	0·409
2........	668		2	10	22	34	5		663	
3........	634		2	25	25	52	12·5		621·5	
4........	582		4	21	19	44	10·5		571·5	
5........	538	14	7	20	12	39	10	2190·5	528	0·639
6........	499		3	25	24	52	12·5		486·5	
7........	447		1	36	14	51	18		429	
8........	396		3	15	15	33	7·5		388·5	
9........	363		....	9	22	31	4·5		358·5	
10........	332	20	2	13	15	30	6·5	1353·5	325·5	1·477
11........	302		5	6	19	30	3		299	
12........	272		6	12	6	24	6		266	
13........	248		2	10	14	26	5		243	
14........	222		5	4	11	20	2		220	
15........	202	11	5	11	13	29	5·5	811·5	196·5	1·355
16........	173		1	8	2	11	4		169	
17........	162		3	7	3	13	3·5		158·5	
18........	149		....	4	3	7	2		147	
19........	142		2	3	....	5	1·5		140·5	
20........	137	8	4	8	2	14	4	578·5	133	1·383
21........	123		1	4	4	9	2		121	
22........	114		....	1	3	4	·5		113·5	
23........	110		3	2	3	8	1		109	
24........	102		....	....	1	1	....		102	
25........	101	17	2	2	1	5	1	410	100	4·146
26........	96		6	2	6	14	1		95	
27........	82		6	1	2	9	·5		81·5	
28........	73		1	5	2	8	2·5		70·5	
29........	65		2	4	2	8	2		63	
30........	57	7	5	2	2	9	1	200	56	3·500
31........	48		....	4	7	11	2		46	
32........	37		....	1	4	5	·5		36·5	
33........	32		1	....	1	2	....		32	
34........	30		1	1	1	3	·5		29·5	
35........	27	6	2	....	1	3	....	74	27	8·108
36........	24		4	3	7	14	1·5		22·5	
37........	10		....	....	2	2	....		10	
38........	8		....	1	....	1	·5		7·5	
39........	7		....	....	1	1	....		7	
40........	6	4	....	....	1	1	....	18	6	2·222
41........	5		1	....	....	1	....		5	
42........	4		1	....	1	2	....		4	
43........	2		1	...	....	1	....		2	
44........	1		1	....	....	1	....		1	
	8,316	96		280	308	684	140·0	7834·0		1·225

TABLE D.

Duration of Membership in the Royal Medical and Chirurgical Society.

Years in the Society. (1)	Number under Observation in each Year. (2)	Died. (3)	Resigned, Ceased to Pay, and Ejected. (4)	Total. (5)		Alive. (6)	Total gone off. (7)		Number Exposed to Risk of Withdrawal from the Society from all causes, including Death. (8)	Per Centage of Total Withdrawals. (9)
1	684	1	....	65	1	15	16	2,226	342	2·920
2	668	2	10		12	22	34		668	
3	634	2	25		27	25	52		634	
4	582	4	21		25	19	44		582	
5	538	7	20	119	27	12	39	2,243	538	5·305
6	499	3	25		28	24	52		499	
7	447	1	36		37	14	51		447	
8	396	3	15		18	15	33		396	
9	363	....	9		9	22	31		363	
10	332	2	13	65	15	15	30	1,376	332	4·724
11	302	5	6		11	19	30		302	
12	272	6	12		18	6	24		272	
13	248	2	10		12	14	26		248	
14	222	5	4		9	11	20		222	
15	202	5	11	44	16	13	29	828	202	5·314
16	173	1	8		9	2	11		173	
17	162	3	7		10	3	13		162	
18	149	....	4		4	3	7		149	
19	142	2	3		5	....	5		142	
20	137	4	8	23	12	2	14	586	137	3·925
21	123	1	4		5	4	9		123	
22	114	....	1		1	3	4		114	
23	110	3	2		5	3	8		110	
24	102	....	....		....	1	1		102	
25	101	2	2	31	4	1	5	417	101	7·434
26	96	6	2		8	6	14		96	
27	82	6	1		7	2	9		82	
28	73	1	5		6	2	8		73	
29	65	2	4		6	2	8		65	
30	57	5	2	15	7	2	9	204	57	7·353
31	48	....	4		4	7	11		48	
32	37	....	1		1	4	5		37	
33	32	1	....		1	1	2		32	
34	30	1	1		2	1	3		30	
35	27	2	....	10	2	1	3	76	27	13·158
36	24	4	3		7	7	14		24	
37	10	....	....		....	2	2		10	
38	8	....	1		1	....	1		8	
39	7	....	....		....	1	1		7	
40	6	....	....	4	....	1	1	18	6	22·222
41	5	1	....		1	....	1		5	
42	4	1	....		1	1	2		4	
43	2	1	....		1	....	1		2	
44	1	1	....		1	....	1		1	
	8·316	96	280	376		308	684		7,974	4·715

TABLE E.

Decrements of Membership in the Royal Medical and Chirurgical Society of London.

Years.	Per Centage $= d$.	$\lambda \cdot a$ $\lambda \cdot 1 - \frac{d}{100} = c$ $d + \Sigma(c) = \lambda \cdot a$.	Number of Members in the Society at the beginning of each Year from the Date of Admission $= a$.	Decrements $= \delta$.	Years.	Per Centage $= d$.	$\lambda \cdot a$ $\lambda \cdot 1 - \frac{d}{100} = c$ $d + \Sigma(c) = \lambda \cdot a$.	Number of Members in the Society at the beginning of each Year from the Date of Admission $= a$.	Decrements $= \delta$.
		5·0000000	100,000	1,920			4·5575004	36,099	1,416
1....	1·920	9·9915835			22....	3·925	9·9826104		
		4·9915805	98,080	2,864			·5401108	34,683	1,863
2....	2·920	·9871298			23....	5·369	·9760334		
		·9787103	95,216	3,650			·5161442	32,820	2,089
3....	3·833	·9830261			24....	6·366	·9714336		
		·9617364	91,566	4,115			·4875778	30,731	2,149
4....	4·495	·9800261			25....	6·992	·9685203		
		·9417625	87,451	4,320			·4560981	28,582	2,093
5....	4·939	·9780024			26....	7·323	·9669720		
		·9197649	83,131	4,321			·4230701	26,489	1,969
6....	5·198	·9768175			27....	7·434	·9664515		
		·8965824	78,810	4,181			·3895216	24,520	1,734
7....	5·305	·9763270			28....	7·073	·9681419		
		·8729094	74,629	3,915			·3576635	22,786	1,564
8....	5·246	·9765976			29....	6·863	·9691222		
		·8495070	70,714	3,630			·3267857	21,222	1,449
9....	5·134	·9771106			30....	6·826	·9692947		
		·8266176	67,084	3,349			·2960804	19,773	1,380
10....	4·992	·9777602			31....	6·982	·9685670		
		·8043778	63,735	3,089			·2646474	18,393	1,353
11....	4·847	·9784225			32....	7·353	·9668314		
		·7828003	60,646	2,865			·2314788	17,040	1,319
12....	4·724	·9789835			33....	7·740	·9650135		
		·7617838	57,781	3,080			·1964923	15,721	1,326
13....	5·330	·9762124			34....	8·438	·9617153		
		·7379962	54,701	3,084			·1582076	14,395	1,341
14....	5·638	·9747971			35....	9·523	·9575382		
		·7127933	51,617	2,943			·1157458	13,054	1,445
15....	5·701	·9745071			36....	11·071	·9490434		
		·6873004	48,674	2,713			·0647892	11,609	1,528
16....	5·574	·9750916			37....	13·158	·9387298		
		·6623920	45,961	2,442			·0035190	10,081	1,474
17....	5·314	·9762858			38....	14·626	·9313256		
		·6386778	43,519	2,202			3·9348446	8,607	1,398
18....	5·060	·9774492			39....	16·244	·9230159		
		·6161270	41,317	1,953			·8578605	7,209	1,300
19....	4·727	·9789698			40....	18·036	·9136231		
		·5950968	39,364	1,725			·7714836	5,909	1,183
20....	4·381	·9805442			41....	20·020	·9029814		
		4·5756410	37,639	1,540			·6744650	4,726	1,050
21...	4·091	9·9818594			42....	22·222	9·8908568		
							3·5653218	3,676	908

In vol. ix. of the Journal of this Society will be found an interesting paper by Dr. Guy, "On the Duration of Life in several Professions," distinguishing, among others, the Medical Profession. The results arrived at by Dr. Guy show a somewhat greater mortality than that for the male population generally of this country. There is also before the public the well-known body of facts collected by Professor Casper, of Berlin, and which exhibits a higher rate of mortality than even the results of Dr. Guy's paper; but it is only right to bear in mind that, however valuable these contributions may be considered, both collections of facts are defective in one very important element, namely, the number of medical men in the profession or class in which the deaths are recorded. Neither Dr. Guy nor Professor Casper had the means of ascertaining the amount of population in the respective groups in which the deaths recorded took place; but, under circumstances, they have made the best possible use of the materials at their command. In the facts brought forward in this paper, however, it will be seen that the number of the living, both in the officers of the Medical Department of the Royal Army and among the Members of the Royal Medical-Chirurgical Society, is known, and therefore all the elements necessary to a complete inquiry into the duration of life in each of these classes are available. It could also be easily shown that the effect of introducing the wanting element in Dr. Guy's inquiry would be to increase the duration of life assigned to the results he has arrived at, and thereby make the rate of mortality approximate more closely to those set forth in Abstracts III and V, preceding.

It is very satisfactory to find so near an agreement in the results of two independent inquiries, originating in so different a manner, and resting on so very different sources of information. But this coincidence only makes the results of the investigation into the duration of life among the officers of the Medical Department of the Army, as brought forward in the early part of this paper, the more remarkable and extraordinary.

It will be observed, that although a very complete analysis has been made of the social condition of life of the medical officers of the Army, in order to arrive at the rate of mortality peculiar to those conditions, still no attempt has been made to determine the physical causes which it is evident prevail so powerfully in producing differences of mortality of so striking a nature as to be wholly without precedent in all former inquiries in the diversified field of Vital Statistics. It is proposed to reserve this more generally interesting part of the investigation for a future occasion.